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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,246	12/05/2000	Jathan D. Edwards	53868US02	7896

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Attention: Eric D. Levinson
Imation Corp.
Legal Affairs
P.O. Box 64898
St. Paul, MN 55164-0898

EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 09/17/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,246

Applicant(s)

EDWARDS, JATHAN D.

Examiner

Martin J Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments are presented after the first rejection to which they are directed.

Rejection of the previous office action not repeated below are withdrawn based upon the arguments and/or amendments of the applicant.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,2,4,5,8,11-13,15,16,19-21, 27-28 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Yamada et al. '267.

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Yamada et al. '267 describes substrates formed for the optical disk where all the lands and grooves are over 200 nm in width (they are 400 nm or 0.4 microns) (10/37-46). A method for making a master and a stamper to produce these substrates is disclosed, where the thickness of the resist is equal to the depth of the grooves and may be between 40 and 100 nm. (10/57-11/10)

While it is not clear if the process uses thicknesses below or above 50 nm, it is clear that the stamper would have no features (grooves or lands) below 200 nm in width. The language concerning the inverse of the desired lands or grooves is considered intended use as the use of recording processes where data is recorded in the areas above lands, grooves or over both is known in the art, therefore embossed substrates resulting from use of either the first (odd) or second (even) generation masters would be useful or as evidenced by JP 60-029950 the master itself may be useful as a substrate. The language also does not specify if the desired lands and grooves are those desired for the disk substrate or the stamper.

As a note, the examiner points out that the figures show the original protrusions to be rounded. The applicant may wish to add this to obviate some of the rejections of record or specify widths of both the grooves and the lands to obviate some of the rejections.

The applicant argues as if the final product produced in Yamada et al. '267 could be made with stampers having other configurations. If the stamper is used directly to form the optical recording medium substrate, then it has the opposite/inverse configuration as the depressions in the stamper form lands/protrusions of the recording medium substrate when overcoated with resin (injection molding) or embossing into a soft material. As the applicant seems to have difficulty visualizing this, the examiner points to figures 11a-d of Santoh et al. '469. Note that the peeling of layers 114 and 115 result in an inverse pattern from that of layers

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112 (a resist) and 111. Layers 114 and 115 would correspond to the replica disk pattern and layers 111 and 112 would be the master. Contrary to the applicants arguments, the examiner has carefully considered the limitation of the claims. The applicant might do well to address the other references applied. The applicant might be advised to more carefully consider the prior art and narrow the claims such that they do not read upon the prior art cited. **The limitations of claims 33 and 34 is perhaps the most interesting amendment to date.** The rejection stands.

5. Claims 1-6,8,11-16,19-21,24 and 27-28 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamada et al. '267.

While it is not clear if the process uses thicknesses below or above 50 nm, it is clear that it would have been obvious to one skilled in the art to in the art to use any thickness between 40 and 100 nm for the resist with a reasonable expectation of achieving a useful master disk and stamper based upon the disclosure of this range as useful within the reference.

The rejection stands for the reasons provided above.

6. Claims 1-5,8,11-16,19-21 and 27-28 are rejected under 35 U.S.C. 102(b) as being fully anticipated by JP 59-193560.

JP 59-193560 describes a positive resist coated to a thickness of 70 nm, which was exposed using an argon ion laser beam to form grooves 70 nm deep, 800 nm wide at a pitch of 2.5 microns, which is then used to form an electroformed stamper.

The rejection stands for the reasons provided above.

7. Claims 1-5,11-15,19,20 and 27-28 are rejected under 35 U.S.C. 102(b) as being fully anticipated by JP 60-029950.

JP 60-029950 describes in the abstract a tracking layer formed of a photoresist having a thickness of 10 nm to 200 microns, with grooves having a depth of 10 nm to 200 microns (the same range as the thickness) and widths of 100 nm to 5 microns. The upper right and lower left columns on page 7 of the reference correspond to the abstract. Example 1 on the lower columns of page 22 uses a resist having a thickness of 0.9 microns to form grooves having a width of 1 micron and a depth of 0.9 microns.

Example 1 anticipates these claims as the active voice has not been used to recite the step of forming the replica. When this occurs this rejection will be withdrawn, but at this point there are significant intended use issues. The rejection stands for the reasons provided above.

8. Claims 1-7, 11-15, 19, 20 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 60-029950.

It would have been obvious to one skilled in the art to form recording tracks having thicknesses equal to the depth of the grooves as in example 1, but using other disclosed resist thicknesses, such as 10, 25, 50 or 100 nm and/or other groove widths, such as 100, 150, 200 nm for the grooves based upon the teachings of the reference to do so.

The rejection stands for the reasons provided above.

9. Claims 1-5, 8-23 and 27-30 and 33-34 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by DeLaat '735.

DeLaat '735 teaches the formation of a spiral pattern, where the depth of the grooves is 100 nm. (0.1 microns) This is hardened through UV exposure, silver is deposited on it, nickel electroformed thereon, the master is peeled away and a second master is formed on the nickel, which is identical to the pattern in the master and is used in embossing

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The applicant argues that the development down to the substrate is not taught. The examiner disagrees noting that figure 1 shows the result of the exposure and development, such that the conductive layer 4 is in contact with the substrate. The applicant argues that the article of DeLaat '735 forms data, not a groove within the scope of the claimed coverage. The examiner notes that the shape of the groove is not described in the claim and that no requirement for a series of concentric circles or a spiral extending across the entire surface of the disk is recited in the claims. The pits of DeLaat are held to be equivalent to embraced by the groove language of the instant claims. The discussion of the formation of metal copies of the metal father matrix is clear as is the relationship of the father matrix to the original master disc. (3/46-55)

The examiner notes that at least some of the groove portions are wider than some of the land features. Therefore the reference meets the claim limitations.

In addition to the basis provided above, the examiner holds that the edges of the resist pattern is rounded when produced. The examiner also notes that the language is open to the use of additional, unrecited and/or unnumbered generation masters as the language of creating is very broad. Until the final article is formed, the limitation is intended use and the formation of additional masters is not precluded. The examiner notes that the teachings of Folger et al. '978 concerning the formation of final articles from either even or odd generation masters. The advantage ascribed to the use of the second generation stamper is realized when using any generation which is a positive of the original master. Further, the examiner notes that the issue of flat lands and curved grooves is only raised with respect to claims 33-34. The applicant fails to appreciate that the next generation is the inverse of the previous generation, which is fully

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recognized in the prior art and that the use of the either odd or even masters is old and well appreciated in the art. The examiner recognizes that the second generation master would be identical in polarity to the original resist pattern (two negatives make a positive in this case). The applicant focuses on the second generation embossing master while failing to appreciate that within the coverage sought only claims 1,11,1928 and 29 and their dependents define the use of a photoresist master as the starting point. The rejection stands.

10. Claims 1-31 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeLaat '735, in view of JP 60-029950 and Santoh et al. '469.

Santoh et al. '469 teaches the formation of useful embossed optical recording media substrate which have grooves 100 nm to 5 microns wide, and 10 to 400 nm deep. (6/6-16).

It would have been obvious to one skilled in the art to modify the process of DeLaat '735 to make other optical recording media substrate which are known to be useful in the art, such as those which have wider openings than resist covered areas taught by JP 60-029950 and Santoh et al. '469 as old and well known within the art, with a reasonable expectation of forming a useful recording medium substrate and being able to form more of them due to the number of stamping masters which can be made from the first generation master and used to emboss substrates.

The rejection stands for the reasons provided above.

11. Claims 1-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeLaat '735, in view of JP 60-029950, Santoh et al. '469, JP 02-150325 and Folger et al. '978.

Santoh et al. '469 teaches the formation of useful embossed optical recording media substrate which have grooves 100 nm to 5 microns wide, and 10 to 400 nm deep. (6/6-16).

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JP 02-150325 shows the stamper (4) and the resultant medium (6) formed from it. There are also advantages in forming deposited layers on the curved surfaces.

Folger et al. '978 teaches the formation of optical devices (phase gratings) where the first and second generation copies are formed using a cast resin. (6/42-7/28 and 7/29-8/35) Subsequent replicas useful in stamping are formed through electrodeposition/electroforming and the metal separates easily from the plastic (8/60-61) The passivation of the nickel surface with dichromate to allow another nickel master to be formed thereon, but allowing for easy removal is disclosed. (8/36-9/5). Note that both odd and even duplicates are used to stamp the desired images. It is just a matter of polarity of the original relative to the desired article.

It would have been obvious to one skilled in the art to modify the process of DeLaat '735 as combined with JP 60-029950 and Santoh et al. '469 as old and well known within the art to form alternate groove cross sections, such as those with curves (u shapes) as taught by JP 02-150325, with a reasonable expectation of forming a useful recording medium substrate and being able to form more of them due to the number of stamping masters which can be made from the first generation master and used to emboss substrates and further, it would have been obvious to use even or odd generation masters to stamp the final articles based upon the disclosure of Folger et al. '978. Particularly, the examiner holds that it would have been obvious to use even generation masters such as the fourth generation master of Folger et al. '978.

This more directly addresses the issue of curved features formed in stampers used to form optical recording media. The U-groove is an old and well-known feature and appears to be known with flat lands.

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12 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 703-308-4397. The examiner can normally be reached on Mondays-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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Martin J Angebranndt
Primary Examiner
Art Unit 1756

September 16, 2002